

What is claimed is:

1. A light source provided with an ultraviolet visible excitation light generation unit that generates first visible light and ultraviolet light and a fluorescence generation unit having a phosphor screen that generates second visible light when ultraviolet visible light generated from the ultraviolet visible excitation light generation unit irradiates the phosphor screen as excitation light for acquiring white light by mixing the first visible light from the ultraviolet visible excitation light generation unit and the second visible light from the fluorescence generation unit, wherein:

the phosphor screen includes phosphor expressed by the following composition formula,

the phosphor composition formula:  $(L_{1-a-b}Gd_aCe_b)_3(Al_{1-c}Ga_c)_5O_{12}:M_d$

wherein, L is at least one type of rare-earth element selected from a group of La, Y, Lu and Sc, a, b and c are in each composition range of  $0 \leq a < 1.0$ ,  $0 < b \leq 0.1$  and  $0 \leq c \leq 1.0$ , M is dopant of a monovalent metal element and the content d is in a range of  $0 < d \leq 1000$  wt-ppm.

2. A light source according to Claim 1, wherein:

M in the composition formula is dopant of at least one type of monovalent metal element selected from a group of Li, Na, K, Cu, Ag and Au; and

the content d is in a range of  $50 \leq d \leq 500$  wt-ppm.

3. A light source according to Claim 1, wherein:

5 a  $\text{GdAlO}_3$  diffraction line in an orientation of (211) of phosphor expressed by the composition formula has intensity of 1/5 or less for a diffraction line in an orientation of (420) of the phosphor having the composition in the measurement of X-ray diffraction  
10 intensity using  $\text{K}\alpha$ -characteristic X-rays using Cu for material.

4. A display provided with a liquid crystal display panel, a light source forming a backlight of the liquid crystal display panel and  
15 control means that controls visible light generated from the light source and displays image information on the liquid crystal display panel, wherein:

the light source is provided with an ultraviolet visible excitation light generation unit that generates first visible light and ultraviolet light and a fluorescence generation unit having a phosphor screen that generates second visible light when ultraviolet visible light generated from the ultraviolet visible excitation light generation unit  
25 irradiates the phosphor screen as excitation light so as to acquire white light by mixing the first visible light from the ultraviolet visible excitation light generation unit and the second visible light from the

fluorescence generation unit; and

the phosphor screen includes phosphor expressed by the following composition formula,

the phosphor composition formula:  $(L_{1-a-b}Gd_aCe_b)_3(Al_{1-c}Ga_c)_5O_{12}:M_d$

wherein, L is at least one type of rare-earth element selected from a group of La, Y, Lu and Sc, a, b and c are in each composition range of  $0 \leq a < 1.0$ ,  $0 < b \leq 0.1$  and  $0 \leq c \leq 1.0$ , M is dopant of a monovalent metal element and the content d is in a range of  $0 < d \leq 1000$  wt-ppm.

5. A light source provided with an ultraviolet visible excitation light generation unit that generates first visible light and ultraviolet light and a fluorescence generation unit having a phosphor screen that generates second visible light when ultraviolet visible light generated from the excitation light generation unit irradiates the phosphor screen as excitation light for acquiring white light by mixing the first visible light from the ultraviolet visible excitation light generation unit and the second visible light generated from the fluorescence generation unit, wherein:

the phosphor screen includes phosphor expressed by the following composition formula,

the phosphor composition formula:  $(L_{1-a-b}Gd_aCe_b)_3(Al_{1-c}Ga_c)_5O_{12}:M_d$

wherein, L is at least one type of rare-earth

element selected from a group of La, Y, Lu and Sc, a, b and c are in each composition range of  $0 \leq a < 1.0$ ,  $0 < b \leq 0.1$  and  $0 \leq c \leq 1.0$ , M includes at least K and the content d is in a range of  $50 \leq d \leq 500$  wt-ppm.

5. A light source according to Claim 6, wherein:

10 a  $\text{GdAlO}_3$  diffraction line in an orientation of (211) of phosphor expressed by the composition formula has intensity of 1/5 or less for a diffraction line in an orientation of (420) of the phosphor having the composition in the measurement of X-ray diffraction intensity using  $\text{K}\alpha$ -characteristic X-rays using Cu for material.

15 7. A display provided with a liquid crystal display panel, a light source forming a backlight of the liquid crystal display panel and control means that controls visible light generated from the light source and displays image information on the liquid crystal display panel, wherein:

20 the light source is provided with an ultraviolet visible excitation light generation unit that generates first visible light and ultraviolet light and a fluorescence generation unit having a phosphor screen that generates second visible light  
25 when ultraviolet visible light generated from the excitation light generation unit irradiates the phosphor screen as excitation light so as to acquire white light by mixing the first visible light from the

ultraviolet visible excitation light generation unit and the second visible light from the fluorescence generation unit; and

the phosphor screen includes phosphor expressed  
5 by the following composition formula,

the phosphor composition formula:  $(L_{1-a-b}Gd_aCe_b)_3(Al_{1-c}Ga_c)_5O_{12}:M_d$

wherein, L is at least one type of rare-earth element selected from a group of La, Y, Lu and Sc, a, b and c are in each composition range of  $0 \leq a < 1.0$ ,  $0 < b \leq 0.1$  and  $0 \leq c \leq 1.0$ , M includes at least K and the content d is in a range of  $50 \leq d \leq 500$  wt-ppm.